

Introduction of Prioritization Models and the Evolution of its Application in the Health Sector: with the Focus of Applied Mathematics

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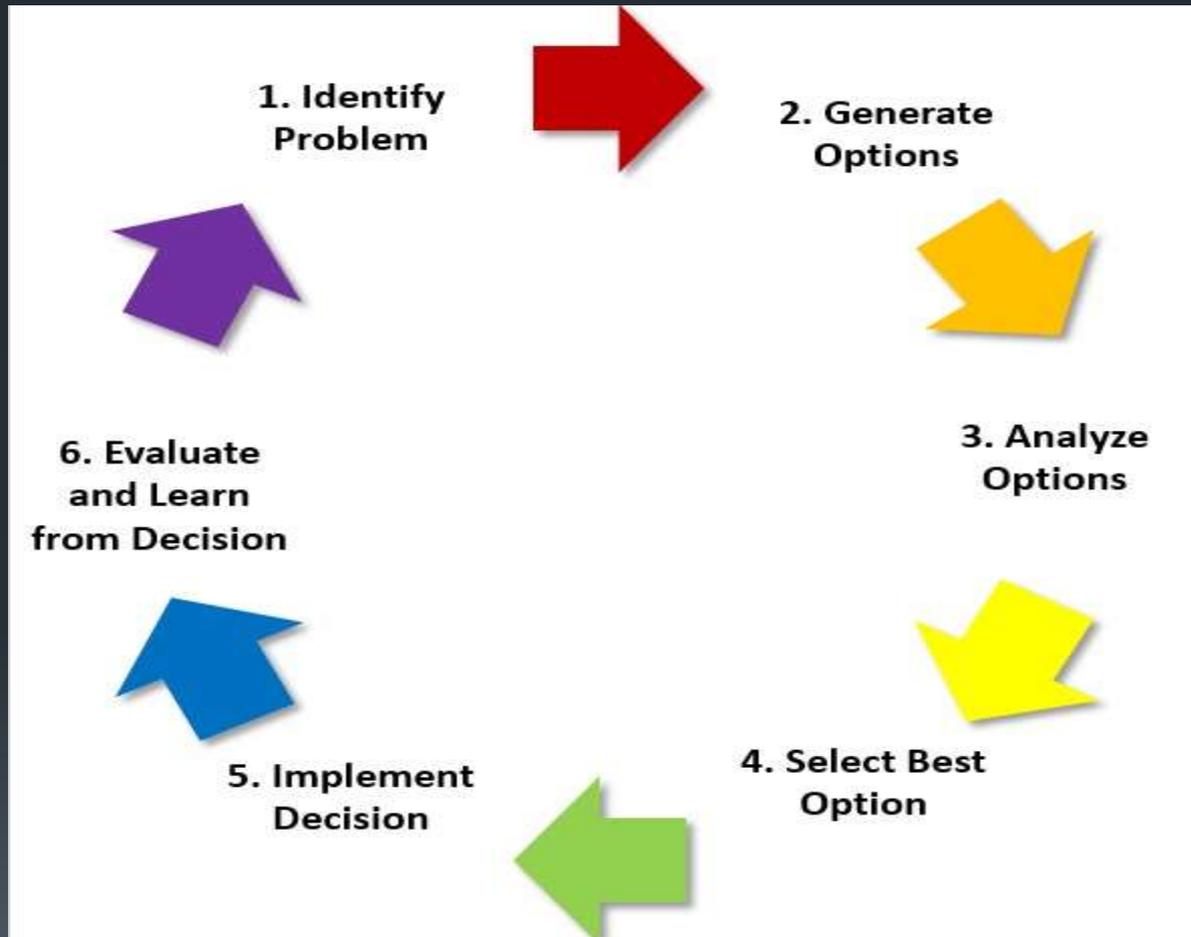


Part 1: An overview of the basics of prioritization for healthcare

Introduction

- Decision makers are always judged on the results of the decisions they make. Therefore, in order to respond to the hectic conditions of today's markets and make effective decisions, they need to increase the accuracy of the models used to make decisions.

Decision cycle



- <https://www.indabaglobal.com/make-better-decisions/>

What is prioritization?

- Prioritization is a dynamic process of deciding which goals or activities are most important right now and creating a commitment to the decisions themselves and the resources allocated to those decisions.
- Source : Laverne Forest, SM. (1976). A Handbook of Priority Setting in Extension: Division of Program and Staff Development, University of Wisconsin.

Decision making and its application in the field of health

- Two approaches are used to make health decisions:
- The first approach is to use technical analysis based on quantifiable epidemiological, clinical, financial and other types of data. (Metrics Approach)
- The second approach, which uses interpretive evaluations, is based on the consensus of the views of informed participants. (Consensus Approach)
- The difference between the two approaches is that the technical approaches depend on the availability of data, and priorities are measured on the basis of measurable units such as disease or intervention. The problem with quantitative methods is that they obscure the amount of judgments that may be made by stakeholders who do not participate in the method, such as users and health care providers. Stakeholder consensus approaches rely on participants' mental judgments and are used to prioritize research at the macro level.
- Source : Anonymous. (2013). Approaches to priority setting. *Priority Medicines for Europe and the World 2013 Update 2013*.

Decision making and its application in the field of health

- For the first time in order to make decisions related to health on the base of applied mathematics, two studies in 2006 and 2008 introduced the possibility of applying models based on applied mathematics in the field of health.

Cost Effectiveness and Resource Allocation



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Methodology

Priority setting of health interventions: the need for multi-criteria decision analysis

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Abstract

Priority setting of health interventions is often ad-hoc and resources are not used to an optimal extent. Underlying problem is that multiple criteria play a role and decisions are complex. Interventions may be chosen to maximize general population health, to reduce health inequalities of disadvantaged or vulnerable groups, *ad hoc* to respond to life-threatening situations, all with respect to practical and budgetary constraints. This is the type of problem that policy makers are typically bad at solving rationally, unaided. They tend to use heuristic or intuitive approaches to simplify complexity, and in the process, important information is ignored. Next, policy makers may select interventions for only political motives.

This indicates the need for rational and transparent approaches to priority setting. Over the past decades, a number of approaches have been developed, including evidence-based medicine, burden of disease analysis, cost-effectiveness analysis, and equity analysis. However, these approaches concentrate on single criteria only, whereas in reality, policy makers need to make choices taking into account multiple criteria simultaneously. Moreover, they do not cover all criteria that are relevant to policy makers.

Therefore, the development of a multi-criteria approach to priority setting is necessary, and this has indeed recently been identified as one of the most important issues in health system research. In other scientific disciplines, multi-criteria decision analysis is well developed, has gained widespread acceptance and is routinely used. This paper presents the main principles of multi-criteria decision analysis. There are only a very few applications to guide resource allocation decisions in health. We call for a shift away from present priority setting tools in health – that tend to focus on single criteria – towards transparent and systematic approaches that take into account all relevant criteria simultaneously.

BMC Health Services Research



Open Access

Technical advance

Evidence and Value: Impact on DECisionMaking – the EVIDEM framework and potential applications

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Abstract

Background: Healthcare decisionmaking is a complex process relying on disparate types of evidence and value judgments. Our objectives for this study were to develop a practical framework to facilitate decisionmaking in terms of supporting the deliberative process, providing access to evidence, and enhancing the communication of decisions.

Methods: Extensive analyses of the literature and of documented decisionmaking processes around the globe were performed to explore what steps are currently used to make decisions with respect to context (from evidence generation to communication of decision) and thought process (conceptual components of decisions). Needs and methodologies available to support decisionmaking were identified to lay the groundwork for the EVIDEM framework.

Results: A framework was developed consisting of seven modules that can evolve over the life cycle of a healthcare intervention. Components of decision that could be quantified, i.e., intrinsic value of a healthcare intervention and quality of evidence available, were organized into matrices. A multicriteria decision analysis (MCDA) Value Matrix (VM) was developed to include the 15 quantifiable components that are currently considered in decisionmaking. A methodology to synthesize the evidence needed for each component of the VM was developed including electronic access to full text source documents. A Quality Matrix was designed to quantify three criteria of quality for the 12 types of evidence usually required by decisionmakers. An integrated system was developed to optimize data analysis, synthesis and validation by experts, compatible with a collaborative structure.

Conclusion: The EVIDEM framework promotes transparent and efficient healthcare decisionmaking through systematic assessment and dissemination of the evidence and values on which decisions are based. It provides a collaborative framework that could connect all stakeholders and serve the healthcare community at local, national and international levels by allowing sharing of data, resources and values. Validation and further development is needed to explore the full potential of this approach.

What is Multi Criteria Decision Making?

- Multi-criteria decision making is a quantitative approach whose main purpose is to help the decision-making process by **creating structured thinking** in decision-makers on the issue of decision-making. Multi-criteria decision making as a discipline has a relatively short history of about 30 years. The development of multi-criteria decision making **is closely related to the development of computer technology**. In other words, the rapid development of computer technology in recent years has made it possible to obtain **a systematic analysis** of complex multi-criteria decision problems.
- Source : Ling Xu, J-BY. (2001). Introduction to Multi-Criteria Decision Making and the Evidential Reasoning Approach. Manchester School of Management University of Manchester Institute of Science and Technology.

Multi-criteria decision framework

- Multi-criteria decision models are classified into two general categories: **Multi-objective models (MODM)** and **Multi-attribute models (MADM)**, so that multi-objective models are used for optimizing of process and multi-attribute models are used to select the best option.

Decision making and its application in the field of health

- Both models followed almost the same process mechanism and were used operationally based on a quantitative process, deciding to use growth hormone in the treatment of Turner syndrome and to prioritize services to include in UHC benefit package.



Multicriteria Decision Analysis for Including Health Interventions in the Universal Health Coverage Benefit Package in Thailand

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ABSTRACT

Objectives: Considering rising health expenditure on the one hand and increasing public expectations on the other hand, there is a need for explicit health care rationing to secure public acceptance of coverage decisions of health interventions. The National Health Security Office, the institute managing the Universal Coverage Scheme in Thailand, recently called for more rational, transparent, and fair decisions on the public reimbursement of health interventions. This article describes the application of multicriteria decision analysis (MCDA) to guide the coverage decisions on including health interventions in the Universal Coverage Scheme health benefit package in the period 2009–2010. **Methods:** We described the MCDA priority-setting process through participatory observation and evaluated the rational, transparency, and fairness of the priority-setting process against the accountability for reasonableness framework. **Results:** The MCDA was applied in four steps: 1) 17 interventions were nominated for assessment; 2) nine interventions were selected for further quantitative as-

essment on the basis of the following criteria: size of population affected by disease, severity of disease, effectiveness of health intervention, variation in practice, economic impact on household expenditure, and equity and social implications; 3) these interventions were then assessed in terms of cost-effectiveness and budget impact; and 4) decision makers qualitatively appraised, deliberated, and reached consensus on which interventions should be adopted in the package. **Conclusions:** This project was carried out in a real-world context and has considerably contributed to the rational, transparent, and fair priority-setting process through the application of MCDA. Although the present project has applied MCDA in the Thai context, MCDA is adaptable to other settings.

Keywords: multicriteria decision analysis, priority setting, UC benefit package.

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Goetghebuer et al. *Cost Effectiveness and Resource Allocation* 2010, **8**:4
<http://www.resource-allocation.com/content/8/1/4>



RESEARCH

Open Access

Combining multicriteria decision analysis, ethics and health technology assessment: applying the EVIDEM decisionmaking framework to growth hormone for Turner syndrome patients

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Abstract

Objectives: To test and further develop a healthcare policy and clinical decision support framework using growth hormone (GH) for Turner syndrome (TS) as a complex case study.

Methods: The EVIDEM framework was further developed to complement the multicriteria decision analysis (MCDA) Value Matrix, that includes 15 quantifiable components of decision clustered in four domains (quality of evidence, disease, intervention and economics), with a qualitative tool including six ethical and health system-related components of decision. An extensive review of the literature was performed to develop a health technology assessment report (HTA) tailored to each component of decision, and content was validated by experts. A panel of representative stakeholders then estimated the MCDA value of GH for TS in Canada by assigning weights and scores to each MCDA component of decision and then considered the impact of non-quantifiable components of decision.

Results: Applying the framework revealed significant data gaps and the importance of aligning research questions with data needs to truly inform decision. Panelists estimated the value of GH for TS at 41% of maximum value on the MCDA scale, with good agreement at the individual level (retest value 40%; ICC: 0.687) and large variation across panelists. Main contributors to this panel specific value were "improvement of efficacy", "disease severity" and "quality of evidence". Ethical considerations on utility, efficiency and fairness as well as potential misuse of GH had mixed effects on the perceived value of the treatment.

Conclusions: This framework is proposed as a pragmatic step beyond the current cost-effectiveness model, combining HTA, MCDA, values and ethics. It supports systematic consideration of all components of decision and available evidence for greater transparency. Further testing and validation is needed to build up MCDA approaches combined with pragmatic HTA in healthcare decisionmaking.

Decision making and its application in the field of health



- Given that both models relied on quantitative data, the authors of both models realized that many health decisions **have criteria that can not be completely quantified** and at the same time have a high impact (for example, ethical, organizational, and other types of criteria). Therefore, the authors tried to develop models that were both quantitative and transparent, able to apply the views of health stakeholders in that area of decision-making and provide a comprehensive model. Some modified models were presented in this slide.



Priority Setting for Universal Health Coverage: We Need Evidence-Informed Deliberative Processes, Not Just More Evidence on Cost-Effectiveness

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Abstract

Priority setting of health interventions is generally considered as a valuable approach to support low- and middle-income countries (LMICs) in their strive for universal health coverage (UHC). However, present initiatives on priority setting are mainly geared towards the development of more cost-effectiveness information, and this evidence does not sufficiently support countries to make optimal choices. The reason is that priority setting is in reality a value-laden political process in which multiple criteria beyond cost-effectiveness are important, and stakeholders often justifiably disagree about the relative importance of these criteria. Here, we propose the use of 'evidence-informed' deliberative processes as an approach that does explicitly recognize priority setting as a political process and an intrinsically complex task. In these processes, deliberation between stakeholders is crucial to identify, reflect and learn about the meaning and importance of values, informed by evidence on these values. Such processes then result in the use of a broader range of explicit criteria that can be seen as the product of both international learning ('core' criteria, which include eg. cost-effectiveness, priority to the worse off, and financial protection) and learning among local stakeholders ('contextual' criteria). We believe that, with these evidence-informed deliberative processes in place, priority setting can provide a more meaningful contribution to achieving UHC.

Keywords: Universal Health Coverage (UHC); Priority Setting; Cost-Effectiveness Analysis; Evidence-Informed Deliberative Processes; Decision-Making; Legitimacy

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ISPOR TASK FORCE REPORT

Multiple Criteria Decision Analysis for Health Care Decision Making—An Introduction: Report 1 of the ISPOR MCDA Emerging Good Practices Task Force

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ABSTRACT

Health care decisions are complex and involve confronting trade-offs between multiple, often conflicting, objectives. Using structured, explicit approaches to decisions involving multiple criteria can improve the quality of decision making and a set of techniques, known under the collective heading multiple criteria decision analysis (MCDA), are useful for this purpose. MCDA methods are widely used in other sectors, and recently there has been an increase in health care applications. In 2014, ISPOR established an MCDA Emerging Good Practices Task Force. It was charged with establishing a common definition for MCDA in health care decision making and developing good practice guidelines for conducting MCDA to aid health care decision making. This initial ISPOR MCDA task force report provides an introduction to MCDA - it defines MCDA; provides examples of its

use in different kinds of decision making in health care (including benefit-risk analysis, health technology assessment, resource allocation, portfolio decision analysis, shared patient/clinician decision making and prioritizing patients' access to services); provides an overview of the principal methods of MCDA, and describes the key steps involved. Upon reviewing this report, readers should have a solid overview of MCDA methods and their potential for supporting health care decision making.

Keywords: decision making, health care, MCDA, multiple criteria decision analysis.

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ISPOR TASK FORCE REPORT

Multiple Criteria Decision Analysis for Health Care Decision Making—Emerging Good Practices: Report 2 of the ISPOR MCDA Emerging Good Practices Task Force

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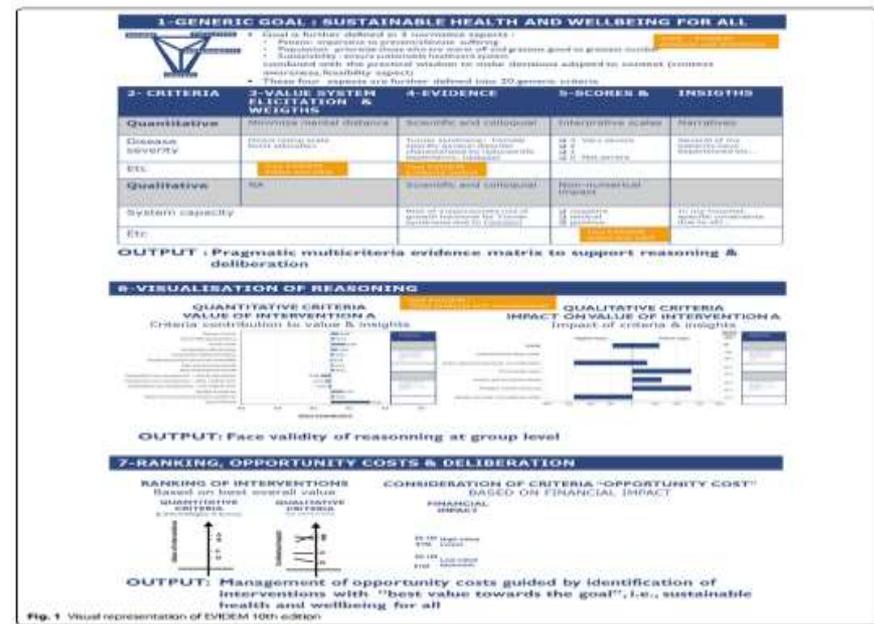
ABSTRACT

Health care decisions are complex and involve confronting trade-offs between multiple, often conflicting, objectives. Using structured, explicit approaches to decisions involving multiple criteria can improve the quality of decision making. A set of techniques, known under the collective heading multiple criteria decision analysis (MCDA), are useful for this purpose. In 2014, ISPOR established an Emerging Good Practices Task Force. The task force's first report defined MCDA, provided examples of its use in health care, described the key steps, and provided an overview of the principal methods of MCDA. This second task force report provides emerging good-practice guidance on the implementation of MCDA to support health care decisions. The

report includes a checklist to support the design, implementation and review of an MCDA; guidance to support the implementation of the checklist; the order in which the steps should be implemented; illustrates how to incorporate budget constraints into an MCDA; provides an overview of the skills and resources, including available software, required to implement MCDA, and future research directions.

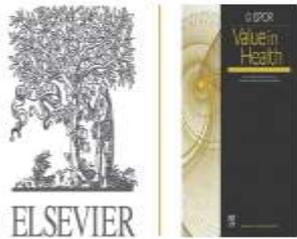
Keywords: decision making, healthcare, MCDA, multiple criteria decision analysis.

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Decision making and its application in the field of health

■ Introduction of MCDM with Decision Rules



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Methodology

Multicriteria Decision Analysis to Support Health Technology Assessment Agencies: Benefits, Limitations, and the Way Forward

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MCDA With Decision Rules

In MCDA with decision rules, the committee interprets the performance matrix with a set of simple rules. These rules guide them in making trade-offs between criteria, which can be quantitative or qualitative in nature. Some HTA agencies follow this approach, defining the relationship between cost-effectiveness and other criteria. For example, ZIN in The Netherlands appraises the cost-effectiveness of technologies in relation to the severity of the condition. Technologies that target mild conditions (ie, below 0.4 on a burden of disease scale from 0 to 1) should cost less than €20 000 per QALY to receive an initial positive recommendation for reimbursement. Technologies targeting severe and very severe conditions (ie, between 0.4 and 0.7 and greater than 0.7) may cost up to €50 000 and €80 000 per QALY, respectively. Subsequently, ZIN evaluates in a deliberative process whether other criteria affect the initial recommendation and reaches a final recommendation.³⁷ In



What is WHO CHOICE?



- WHO-CHOICE is a program in the World Health Organization that helps countries decide priorities based on considerations of impact and cost-effectiveness.
- The impact on the population of interest when it is given a certain technology gives the estimate of effectiveness, which is applied to a population level model to project the likely impact in health adjusted life expectancy over the next 100 years. For cost, the costs of administration, training, and programme elements are added to the cost of operations as determined from best practice guidelines.
- <https://www.who.int/news-room/q-a-detail/who-choice-frequently-asked-questions>

What is WHO CHOICE?

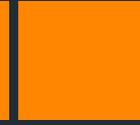


- WHO-CHOICE tools, including disease models and costing tools, are pre-set with regional average data. For a contextualisation, data including epidemiology, intervention impacts, and prices can be replaced by a country analyst in order to use data that is more appropriate to the local setting.

- <https://www.who.int/news-room/q-a-detail/who-choice-frequently-asked-questions>

Recommendations

- Priority setting is kind of decision making and its process consists of 6 stages.
- Priority setting process should have metrics and consensus approach at same time.
- Robust deliberation framework is necessary for running consensus approach.



Part II: Research prioritization in the field of healthcare

What is research prioritization?

- Prioritization of research topics should be done in order to use **scarce resources efficiently**. To date, the use of such approaches by researchers and research conductors has become less operational, in part because **the practical methods** used in this regard are less widely used (Florence, 2004).
- Source: Fleurence, RL TD. (2004).Setting priorities for research. Health Policy. 69(1):1-10.

Phase 1: Preparing a list of potential research topics

- A) Preparing a list related to health sector problems **proactively**. In this case, before the emergence of problems in the field of healthcare, the necessary assessments are performed in advance and in different scenarios, **problems that may occur in the future for the country's health system are predicted and the solution for them are predicted.**

- B) Preparing a list related to health sector problems **passively**. In this case, **after the emergence of certain problems in the field of health, the need to find solutions for the problems necessitates the implementation of research projects.**



Phase 1: Preparing a list of potential research topics

According to the World Health Organization guidelines, research topics are divided into 4 main categories:

- *) **Studies related to measuring the extent of health problems** such as disease burden studies
- *) **Studies related to measuring causes** such as determining risk factors
- *) **Basic studies related to the development of new solutions** such as the development of new therapeutic interventions
- *) **Studies related to the translation of new interventions into operation** in the health system
- *) **Studies related to evaluating the impact of health programs** and interventions

Figure 2. Distribution of WHO research priorities by research type (n=2145)
extracted from WHO publications published 2002–2017

LEGEND

The five categories of research type were adapted and defined here as follows: **Problem** – research to measure the size of the health problem through epidemiology, estimating the burden of disease and other forms of data collection; **Cause** – research to understand the causal agents, risk factors and determinants of the health issue (this research may include, for instance, study of infection cycles, vectors, role of socioeconomic factors, environment, diet and the interaction of multiple factors); **Solution** – research to develop new interventions, including therapeutics, devices and procedures and also policy interventions, public health campaigns etc; **Implementation** – research to translate new interventions into policy and practice and understanding the barriers to delivering known interventions; **Evaluation** – research to monitor and evaluate the effectiveness or health impact of an intervention or programme.



Source:

A systematic approach for undertaking a research priority-setting exercise. Guidance for WHO staff. Geneva: World Health Organization; 2020.

Phase 1: Preparing a list of potential research topics



Topic Selection Process

Potential technology assessment topics are identified through several sources, including informal surveys of advisory committees and other Canadian healthcare stakeholders, a review of findings from our horizon scanning program and inquiries made to our rapid review program. Potential topics are also identified through proposals received by the CADTH Web site. Less frequently, more formal surveys have been undertaken to identify topics of interest. Upon receipt of any proposal for assessment, requestors are contacted for clarification of the policy or practice issue and the context in which decisions will be made along with the timing and type of information required to inform a decision. Proposals are validated by further consultation with researchers, policy makers, and clinical subject experts. Proposals that appear to have pan-Canadian relevance and are likely to be chosen based on core criteria are then submitted to advisory committee members for prioritization.

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Priority setting for health technology assessment at CADTH

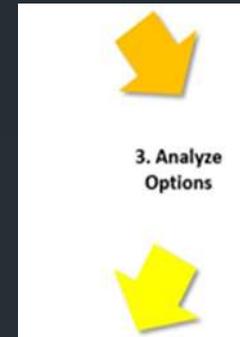
Don Husereau, Michel Boucher, Hussein Noorani
Canadian Agency for Drugs and Technologies in Health (CADTH)

Source:

Husereau, D., Boucher, M., & Noorani, H. (2010). Priority setting for health technology assessment at CADTH. *International journal of technology assessment in health care*, 26(3), 341-347.

Phase 2: Determining the attributes related to the selection and prioritization of research topics

- A) General attributes that must be considered for each research topic:
 - 1) Appropriateness of the research subject within the context of the health system
 - 2) Non-duplication
 - 3) Level of technical and executive feasibility
 - 4) Level of political acceptance
 - 5) Level of moral acceptance



Phase 2: Determining the attributes related to the selection and prioritization of research topics

B) Specific attributes related to the prioritization of research topics for HTA

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- (A) Actual burden of disease, given current treatment strategies for the individual patient;
- (B) Potential benefit for the individual patient;
- (C) Number of patients;
- (D) Direct costs of the intervention per patient;
- (E) Financial consequences of applying the intervention over time (impact on total costs of health care);
- (F) Additional aspects, with an impact on health policy (for example, rapid uncontrolled diffusion).



Health Policy 62 (2002) 227–242

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Priority setting for health technology assessment in The Netherlands: principles and practice

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Phase 3: How to score attributes



Table 1
Definition and scoring of policy criteria

Criterion	Measured with	Score
(A) Actual burden of disease, given current treatment strategies	Rating scale (0–1.00), 0 represents the highest burden of disease and 1.00 represents the lowest burden of disease	
	0.81–1.00	1
	0.61–0.80	2
	0.41–0.60	3
	0.21–0.40	4
(B) Potential benefit for the individual patient	Rating scale (0–1.00), 0 represents no potential health benefit and 1.00 represents the highest potential benefits for an individual patient	
	0–0.20	1
	0.21–0.40	2
	0.41–0.60	3
	0.61–0.80	4
(C) Number of patients	Absolute numbers (per year)	
	0–5000	1
	5001–10 000	2
	10 001–15 000	3
	15 001–20 000	4
(D) Direct costs of intervention per patient	US \$	
	0–1500 US \$	1
	1501–3000 US \$	2
	3001–4500 US \$	3
	4501–6000 US \$	4
(E) Financial consequences	> 6000 US \$	5
	Qualitative estimation	
	High potential increase in costs	1
	Little potential increase in costs	2
	Cost neutrality	3
(F) Additional aspects with an impact on health policy (e.g. uncontrolled diffusion)	Little potential decrease in costs	4
	High potential decrease in costs	5
	Number of aspects	
	No aspects	1
	One aspect	2
Two aspects	3	
Three aspects	4	
Four or more than four aspects	5	

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Source:

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Phase 4: How to legitimate priority setting decisions

Decision-making characteristics, which should be judged in stakeholder panels based on the informed discussions of stakeholders, the results obtained from the relevant statistical or mathematical modeling, the main model used in this area is the Accountability for Reasonability (A4R) model.

DECISION MAKING PROMPT TOOL	ACCOUNTABILITY FOR REASONABLENESS (A4R) Accountability for Reasonableness (A4R) is an ethical framework that describes the conditions of a <i>fair decision-making process</i> . It focuses on <i>how</i> decisions should be made and <i>why</i> these decisions are ethical.
R ELEVANCE	Decisions should be made on the basis of reasons (e.g., evidence, principles, arguments, etc.) that 'fair-minded' people agree are relevant under the circumstances.
P UBLICITY	The process, decisions, and their rationales should be transparent and accessible to relevant stakeholders.
R EVISION & A PPEALS	There should be opportunities to revisit and revise decisions in light of further evidence or arguments. There should be a mechanism for challenge and dispute resolution.
E MPOWERMENT	There should be efforts to minimize power difference in the decision-making context and to optimize effective opportunities for participation.
E NFORCEMENT	There should be either voluntary or public regulation of the process to ensure that the other four conditions are met.

Source: [//www.rvh.on.ca/healthethics/SiteAssets/SitePages/ethics/Accountability%20for%20Reasonableness%20Framework%20A4R.pdf](http://www.rvh.on.ca/healthethics/SiteAssets/SitePages/ethics/Accountability%20for%20Reasonableness%20Framework%20A4R.pdf)

Phase 4: Holding a panel involving health system stakeholders to discuss the evidence in order to legitimize selected issues

RELEVANCE:

- Clarify the aim and scope of the priority setting process
- Identify clear and explicit decision criteria.
 - ❑ Align criteria explicitly with the hospital's strategic directions, operational goals, and other relevant factors (e.g., LHIN direction).
 - ❑ Engage stakeholders in identifying and defining relevant decision criteria.
 - ❑ Ensure each criterion describes a distinct concept.
 - ❑ Build criteria into decision tools (e.g., decision trees, business case templates).
- Collect data/information related to the criteria.
 - ❑ Validate accuracy and completeness of data/information with stakeholders.
- Develop a rationale for each decision based on the criteria and data/information.
 - ❑ Ensure sufficient time for deliberation and discussion to build agreement on the rationale.
 - ❑ Provide an explanation for any departures from the established decision criteria, data/information, or procedures.
- Engage a broad range of stakeholder perspectives and relevant experience/expertise in the priority setting process.

PUBLICITY:

- Develop a formal communications plan to support decision-making.
 - ❑ Identify appropriate mechanisms to communicate effectively with affected stakeholders.
 - ❑ Communicate why decisions must be made (i.e., what the decision-making process is/is not about), how decisions will be made, who will make decisions, which criteria will be used to make decisions, how stakeholders can participate, and what stakeholders can expect once the decision has been made.
- Publicize the decision and its rationale.
 - ❑ Communicate the rationale for each decision related back to the decision criteria and available data/information.

REVISION:

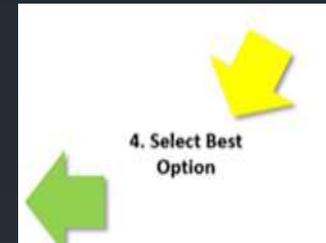
- Incorporate opportunities for iterative decision review.
 - ❑ Revise decisions as new data/information or errors in data/information emerge.
 - ❑ Share draft decisions with stakeholders for feedback and comment.
- Develop a formal decision review.
 - ❑ Define explicit decision-review criteria (e.g., new information, correction of errors, failure of due process).
 - ❑ Be explicit about which decisions may be subject to review.
 - ❑ Develop a communication strategy to support the decision review process.
 - ❑ Communicate the final decision and rationale to affected stakeholders.

EMPOWERMENT:

- Facilitate the effective participation of all affected stakeholders.
 - ❑ Include critical mass of affected stakeholders in consultation and decision-making, where significant disparities in influence exist among stakeholder groups.
 - ❑ Develop communications materials in accessible language and use multiple communications media to optimize reach.
 - ❑ Consider decision procedures that optimize decision-making autonomy (e.g., closed voting).
- Provide training and support for staff.
 - ❑ Train and provide ongoing assistance to program managers and staff in the use of decision tools, workbooks, etc..
 - ❑ Provide communication materials for managers to use locally with their staff.
- Support the process with appropriate change management strategies.

ENFORCEMENT:

- Lead by example.
 - ❑ Commit to ethical decision-making and encourage and support colleagues to do the same.
 - ❑ Maintain a low tolerance for political end-runs and 'gaming' behaviour.
- Evaluate and improve the decision-making process.
 - ❑ Monitor process to ensure fairness and make mid-course corrections as needed.
 - ❑ Develop a formal evaluation strategy to identify good practices and opportunities for improvement.
 - ❑ Identify improvement strategies to use in future decision-making.



Daniels *Cost Eff Resour Alloc* 2018, **16**(Suppl 1):51
<https://doi.org/10.1186/s12962-018-0124-9>

Cost Effectiveness and
Resource Allocation

COMMENTARY

Open Access



Combining A4R and MCDA in priority setting for health

Norman Daniels*

From Priority Setting in Global Health Symposium Boston, MA, USA. 5–6 October 2016

Source:

Daniels, N. Combining A4R and MCDA in priority setting for health. *Cost Eff Resour Alloc* 16, 51 (2018). <https://doi.org/10.1186/s12962-018-0124-9>

Phase 5: Determining the working group for the implementation and continuous monitoring of selected research topics

According to the 6-step decision-making process, in which step 5 requires the establishment of decisions, after prioritizing research topics, which is a kind of decision-making, we need to **establish a working group** including all the stakeholders in the field to develop a coherent roadmap for operationalizing the implementation of research with regard to priority topics



Phase 6: Determining how to measure the effects of the implementation of selected research topics

Evaluating the Benefits from Health Research and Development Centres: A Categorization, a Model and Examples of Application

Steve Hanney, Tim Packwood, Martin Buxton

First Published April 1, 2000 | Research Article

<https://doi.org/10.1177/13563890022209181>



6. Evaluate
and Learn
from Decision



Phase 6: Determining how to measure the impacts of the implementation of selected research topics

Yazdizadeh et al. Health Research Policy and Systems (2018) 16:15
DOI 10.1186/s12961-018-0286-0

Health Research Policy
and Systems

RESEARCH

Open Access



Impact assessment of Iran's health technology assessment programme

Bahareh Yazdizadeh¹, Farideh Mohtasham^{1*} and Ashraf Velayati²

- (1) Knowledge production: It reflects the outputs resulting from the study (paper or any other printed documents).
- (2) The benefits include better targeting for future research, development of research skills, personnel and total research capacity, increased applicability of overseas study, and staff development/educational benefits.
- (3) Policy and administrative benefits include improving the databases required for policy and executive decisions, and other policy benefits resulting from research
- (4) Benefits to the health sector include cost savings in the provision of existing services, quality improvement in the service delivery process, enhancing the effectiveness of services (e.g. promoting health), justice (e.g. improving resource allocation at regional level), better targeting and access, revenue derived from intellectual property rights, and organisational development.
- (5) Broad economic benefits include the economic benefits derived from commercial exploitation of research and development innovations, and those gained from a healthy workforce and a reduction in the number of working days lost.

Source : Yazdizadeh, B., Mohtasham, F. & Velayati, A. Impact assessment of Iran's health technology assessment programme. Health Res Policy Sys 16, 15 (2018).
<https://doi.org/10.1186/s12961-018-0286-0>

Recommendations

- Health research priority setting should consist of 6 stages :
- Phase 1: Preparing a list of potential research topics
- Phase 2: Determining the attributes related to the selection and prioritization of research topics
- Phase 3: How to score attributes
- Phase 4: How to legitimate priority setting decisions
- Phase 5: Determining the working group for the implementation and continuous monitoring of selected research topics
- Phase 6: Determining how to measure the impacts of the implementation of selected research topics

Thank you for
your attention

